Overload Relays

Bulletin	**193-K**	**193-T1**	**193-ED**	**193-EE**
Type	**Miniature Thermal Overload Relay**	**Bimetallic Overload Relays**	**Electronic Overload Relay, E1 Plus**	
Rated Current (Range)	0.1…12.5 A	0.1…90 A	0.1…45 A	0.1… 800 A
Operating Voltage, Nominal	690V	690V	690V	690V AC (IEC)/ 600V AC (CSA/UL) ✶ 1000V AC (IEC)/ 600V AC (CSA/UL) ❄
Overload Type	Bimetallic	Bimetallic	Solid State	Solid State
Trip Class (Fixed)	10A	10A	10	—
Trip Class (Adjustable)	—	—	—	10, 15, 20 or 30
Ambient Compensated	✓	✓	✓	✓
Reset Type	Automatic and Manual	Automatic and Manual	Manual	Manual / Auto-Manual
Adjustment Range	1.5:1	1.5:1	5:1	5:1
Phase Loss	Normal Sensing w/differential mechanism	Normal Sensing w/differential mechanism	Enhanced Sensing	Enhanced Sensing
Trip Contact N.C.	✓	✓	✓	✓
Alarm Contact N.O.	✓	✓	✓	✓
Mounts to Contactor	100-K	100-C	100-C	100-C, 100-D
Product Selection	**See page 1-61**	**See page 1-62**	**See page 1-64**	**See page 1-64**

✶ 193-EE_B, 193-EE_D, 193-EEGE
❄ 193-EE_F, 193-EE_G, 193-EE_H

POWER

Overload Relays

Bulletin	193-EC1/-EC2/-EC3/-EC4	825-P
Type	**Electronic Overload Relay E3 and E3 Plus**	**Modular Protection System**
Rated Current (Range)	0.4…5000 A	0.5…5000 A
Operating Voltage, Nominal	690V / 1000V ✶	690V/1000V
Overload Type ❄	Microprocessor Based	Microprocessor Based
Trip Class (Adjustable) ❄	5…30	1…600
Ambient Compensated	✓	✓
Reset Type ❄	Automatic, Manual and Remote	Automatic, Manual and Remote
Adjustment Range ❄	5:1	4:1
Phase Loss	Imbalance Sensing	Imbalance Sensing
Phase Reversal	—	✓
Ground (Earth) Fault	E3 Plus: Sensitive	Residual or Sensitive
Overcurrent (Jam) Detection	✓	✓
Stall Detection	✓	✓
Starts/Hour Monitoring	✓	✓
Underload Detection	✓	✓
Current Imbalance	✓	✓
Short Circuit Protection	—	✓
PTC Thermistor Monitoring	✓ (EC2/EC3)	✓
RTD Monitoring	—	12-Channel Optional Scanner
Warning Settings	✓	✓
Trip Contact N.C.	✓	✓
Alarm Contact N.O.	✓	✓
Number of Outputs	E3: 1/E3 Plus: 2	3 (Basic)/7 (with I/O Expansion)
Number of Inputs	E3: 2/E3 Plus: 4	2 (Basic)/5 (with I/O Expansion)
Number of Analog Outputs	—	1(with I/O Expansion)
ODVA (DeviceNet) Conformance	✓	✓
Atex Certification	In Preparation	—
Variable Frequency (VFD) Compatible	✓	—
Mounts to Contactor	100-C, 100-D	100-D (825-MCM)
Product Selection	**See page 1-68**	**See page 1-71**

✶ 193-EC_F, 193-EC_G, 193-EC_H
❄ not for 193-EC4 (no overload protection)

Monitoring Relays

Bulletin	809S		813S	817		819	
Type	E1	E2	E2	E1	E2	E1	E2
	Current Monitors		Phase Monitors	Thermistor Monitors		Motor Rotation Monitors	
Under- and overcurrent protection	✓	✓	—	—	—	—	—
Under- and overvoltage protection	✓	—	✓	—	—	—	—
Phase imbalance and phase loss protection	—	—	Voltage based	—	—	—	—
Overtemperature protection	—	—	—	✓	✓	—	—
Speed detection via frequency input	—	—	—	—	—	✓	—
Speed detection evaluation of motor feedback voltage	—	—	—	—	—	Suitable for small motors with low inertia	
Case size: H: (mm) W: (mm) D: (mm)	 110 22.5 75	 109.5 45 75	 109.5 45 75	 89 22.5 98.8	 89 22.5 98.8	 110 22.5 75	 109.5 45 75
LCD / Keypad	✓	✓	✓	—	—	✓	✓
LED Status Indicator	—	—	—	✓	✓	—	—
Automatic reset	✓	✓	✓	✓	✓	✓	✓
Manual reset	—	—	—	—	✓	—	—
Remote reset	—	—	—	—	✓	—	—
Changeover contacts (SPDT)	1	1	1	—	—	—	1
N.O. contacts	—	1	1	2	2 (independent)	2 (independent)	1
Programmable trip level, reset level and time delay settings	✓	✓	✓	—	—	✓	✓
Trip cause identification	—	—	✓	✓	✓	—	—
Measuring Circuit Monitoring (open, short)	—	—	—	✓	✓	✓	✓
Product Selection	See page 1-73						

POWER

Miniature Bimetallic Overload Relays 193-K

- Standard Motor Protection for AC and DC Motors
- Overload Protection Trip class 10A
- Auxiliary Switch (1 N.O. and 1 N.C.)
- Phase Loss Sensitivity
- Manual/Auto Reset Button
- Test/Stop Button
- Trip Indicator

Mounts to Contactor	Setting Range [A] ✶❄	Max. Current Rating Backup gL Fuse [A] IEC Coordination Type		Cat. No.
		Type 1	Type 2	
100-K05…100-K12	0.10…0.16	35	1	193-KA16
	0.16…0.25	35	1	193-KA25
	0.25…0.40	35	2	**193-KA40**
	0.35…0.50	35	2	**193-KA50**
	0.45…0.63	35	2	**193-KA63**
	0.55…0.80	35	4	**193-KA80**
	0.75…1.0	35	4	**193-KB10**
	0.9…1.3	35	6	**193-KB13**
	1.1…1.6	35	6	**193-KB16**
	1.4…2.0	35	10	**193-KB20**
	1.8…2.5	35	20	**193-KB25**
	2.3…3.2	35	20	**193-KB32**
	2.9…4.0	35	20	**193-KB40**
	3.5…4.8	35	20	**193-KB48**
	4.5…6.3	35	20	**193-KB63**
100-K09…100-K12	5.5…7.5	35	20	**193-KB75**
	7.2…10.0	35	20	**193-KC10**
100-K12	9.0…12.5	35	20	**193-KC12**

✶ To select the setting range for use in Y-Δ Starters, multiply the rated operating current of the motor by a factor of 0.58.

❄ For motors with service factor of 1.15 or greater, use motor nameplate full load current. For motors with service factor of 1.0, use 90% of the motor nameplate full load current.

Bimetallic Overload Relays 193-T1

- Overload protection trip class 10 / 10A
- Phase loss protection
- Ambient temperature compensation
- Auxiliary contacts (1 N.O. and 1 N.C.)
- Manual/automatic reset mode selectable
- Test function for auxiliary contacts
- Stop button
- Trip Indicator
- Optional remote reset solenoid and external reset accessories

For Use With ✶	Setting Range [A] ❄‡	Max. Back-up gL/gG fuse [A] 50 kA, 690V AC IEC/EN 60947-4-1 Coordination Type 1	Type 2	Cat. No.
100-C09…100-C23	0.1…0.16	50	—	193-T1AA16
	0.16…0.25	50	—	193-T1AA25
	0.25…0.40	50	2	193-T1AA40
	0.35…0.50	50	2	193-T1AA50
	0.45…0.63	50	2	193-T1AA63
	0.55…0.80	50	4	193-T1AA80
	0.75…1.0	50	4	193-T1AB10
	0.90…1.3	50	6	193-T1AB13
	1.1…1.6	50	6	193-T1AB16
	1.4…2.0	50	10	193-T1AB20
	1.8…2.5	50	16	**193-T1AB25**
	2.3…3.2	50	16	**193-T1AB32**
	2.9…4.0	50	16	**193-T1AB40**
	3.5…4.8	50	16	**193-T1AB48**
	4.5…6.3	50	20	**193-T1AB63**
	5.5…7.5	50	25	**193-T1AB75**
	7.2…10	50	25	**193-T1AC10**
	9.0…12.5	50	35	**193-T1AC12**
100-C12…100-C23	11.3…16	50	35	**193-T1AC16**
100-C16…100-C23	15…20	80	40	**193-T1AC20**
	17.5…21.5	80	50	**193-T1AC21**
100-C23	21…25	80	50	**193-T1AC25**
100-C30…100-C37	15…20	80	40	193-T1BC20
	17.5…21.5	80	50	193-T1BC21
	21…25	80	50	193-T1BC25
	24.5…30	100	63	193-T1BC30
	29…36	125	63	193-T1BC36
100-C37	33…38	125	63	193-T1BC38
100-C43	17…25	100	50	193-T1CC25
	24.5…36	125	80	193-T1CC36
	35…47	160	100	193-T1CC47
100-C60…100-C85	35…47	160	100	193-T1DC47
	45…60	200	125	193-T1DC60
100-C72…100-C85	58…75	200	125	193-T1DC75
100-C85	72…90	250	160	193-T1DC90

Thermal Overload Relays, continued

For Use With ✶	Setting Range [A] ❄‡	Max. Back-up gL/gG fuse [A] 50 kA, 690V AC IEC/EN 60947-4-1 Coordination		Cat. No.
		Type 1	Type 2	
Separate mounting required (Panel-mounted device)	35…47	160	100	193-T1DC47P
	45…60	200	125	193-T1DC60P
	58…75	200	125	193-T1DC75P
	72…90	250	160	193-T1DC90P

✶ Bulletin 193-T1 overload relays shall not be used with conventional DC controlled contactors. Use electronic controlled DC versions.

❄ To select the setting range for use in Y-Δ Starters, multiply the rated operating current of the motor by a factor of 0.58.

‡ For motors with service factor of 1.15 or greater, use motor nameplate full load current. For motors with service factor of 1.0, use 90% of the motor nameplate full load current.

Add-On Modules

	Description	For Use With	PQ	Cat. No.
	DIN Rail/Panel Mounting Adapter For separate mounting of overload relays Snaps on to 35 mm top hat rail	193-T1AA, 193-T1AB, 193-T1AC, 193-T1BC	1	**193-T1APM**
	Screw Adapter For screw fixing of the 193-T1APM panel adapter (1 required per adapter)	193-T1APM	10 ✶	140M-C-N45
	Remote Reset Solenoid For remote reset of 193-K and 193-T1 overload relays	193-K, 193-T1 (not for 193-T1DC_P)	1	193-T1R⊗
	External Reset Button For enclosed, through-the-door reset applications. Metal construction, IP66, non-illuminated. Refer to the 800F selection information for additional types.	All	1	**800FM-R611**
	Reset Rod Length 142 mm, adjustable range 141…159 mm	All	1	**800F-ATR08**
	Reset Adapter Expands the reset target area when using an external reset	193-K, 193-T1 (not for 193-T1DC_P)	1	193-RA3

✶ Must be ordered in multiples of package quantity.

PQ = Package Quantity

⊗ Coil Voltage Codes for Remote Reset Solenoid

[V]	24	48	110	120	125	220…240
50 Hz	—	—	**D**	—	—	—
60 Hz	—	—	—	**D**	—	—
50/60 Hz	**KJ**	KY	—	—	—	**KF**
DC	**ZJ**	ZY	ZD	—	ZS	—

Electronic Overload Relays E1 Plus - 193-ED, 193-EE

- Self-Powered
- Fast Phase Loss Protection
- Wide Adjustment Range (5:1)
- Insert-Molded Power Connections
- 1 N.O. and 1 N.C. Isolated Auxiliary Contacts (B600, AC-15 Rated)
- Low Energy Consumption (150 mW)
- Ambient Temperature Compensation
- Visible Trip Indication
- Optional accessories for expanded functionality

Standard version

Pass-through version

Description	Mounts to Contactor	Adjustment Range [A]	Cat. No.
Three-Phase Devices 193-ED			
• 0.1…45 A Current Range • Fixed Trip Class 10 • Manual Reset	100-C09…100-C23	0.1…0.5	**193-ED1AB**
		0.2…1.0	**193-ED1BB**
		1.0…5.0	**193-ED1CB**
		3.2…16	**193-ED1DB**
		5.4…27	**193-ED1EB**
	100-C30…100-C43	5.4…27	193-ED1ED
		9…45	**193-ED1FD**
• 1…27 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	Integrated panel/DIN Rail mount and pass-thru wiring	1.0…5.0	**193-ED1CP**
		3.2…16	**193-ED1DP**
		5.4…27	193-ED1EP
Three-Phase Devices 193-EE			
• 0.1…800 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	100-C09…100-C23	0.1…0.5	**193-EEAB**
		0.2…1.0	**193-EEBB**
		1.0…5.0	**193-EECB**
		3.2…16	**193-EEDB**
		5.4…27	**193-EEEB**
	100-C30…100-C43	5.4…27	**193-EEED**
		9…45	**193-EEFD**
	100-C60…100-C85	5.4…27	193-EEEE
		9…45	193-EEFE
		18…90	**193-EEGE**
	100-D95…100-D180	30…150 ✶	**193-EEHF**
		40…200 ✶	**193-EEJF**
	100-D210…100-D420	40…200 ✶	193-EEJG
		60…300 ✶	**193-EEKG**
	100-D210…100-D420	100…500 ✶	193-EELG
	100-D630…100-D860	120…600 ✶	193-EEMH
	100-D630…100-D860	160…800 ✶	193-EENH
Three-Phase Devices 193-EE			
• 1…27 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	Integrated panel/DIN Rail mount and pass-thru wiring	1.0…5.0	193-EECP
		3.2…16	193-EEDP
		5.4…27	193-EEEP

✶ Rated operating voltage IEC: 1000V AC

Electronic Overload Relays E1 Plus - 193-ED, 193-EE, continued

Description	CT Ratio	Adjustment Range [A]	Cat. No.
Three-Phase Devices 193-EE_Z for use with external CT's (193-CBCT_)			
• 30…800 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset • Require one external CT per phase (not supplied) (Rating for protecting relaying, Secondary current 5 A Secondary load 0.1 VA (overload relay only) Accuracy >= 2 % over operating range) • Require the use of the panel adapter 193-EPB	150:5	30…150	193-EEHZ
	200:5	40…200	193-EEJZ
	300:5	60…300	193-EEKZ
	400:5	80…400	193-EEWZ
	500:5	100…500	193-EELZ
	600:5	120…600	193-EEMZ
	800:5	160…800	193-EENZ

Description	Mounts to Contactor	Adjustment Range [A]	Cat. No.
Single-Phase Devices 193-EE			
• 1…90 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	100-C09…100-C23	1.0…5.0	193S-EEPB
		3.2…16	193S-EERB
		5.4…27	193S-EESB
	100-C30…100-C43	9…45	193S-EETD
	100-C60…100-C85	18…90	193S-EEUE
• 1…27 A Current Range • Selectable Trip Class (10, 15, 20 or 30) • Selectable Manual/Auto-Manual Reset	Integrated panel/DIN Rail mount and pass-thru wiring	1.0…5.0	193S-EEPP
		3.2…16	193S-EERP
		5.4…27	193S-EESP

Accessories for Overload Relays

	Description	For Use With	PQ	Cat. No.
	DIN Rail/Panel Adapter For separate mounting – can be mounted to top-hat rail EN 50 022-35.	193-ED1_B, 193-EE_B, 193S-EE_B, 193-EE_Z	1	**193-EPB**
		193-ED1_D, 193-EE_D, 193S-EE_D		**193-EPD**
		193-EE_E, 193S-EE_E		**193-EPE**
	Current Adjustment Shield Prevents inadvertent adjustment of the current setting. Must be ordered in multiples of package quantities.	193-ED (all), 193-EE (all)	10	193-BC8
	External Reset Adapter For enclosed, through-the-door reset applications. Use with external reset button.	193-ED (all) 193-EE_B, 193-EE_D, 193-EE_E 193-EE_Z	1	193-ERA
	External Reset Button For enclosed, through-the-door reset applications. Metal construction IP66, non-illuminated with rod (length: 142 mm, adjustable range 141…159 mm). Refer to the 800F catalog pages for additional types.	193-ED (all) 193-EE (all)	1	**800FP-R611**
			1	**800F-ATR08**

PQ = Package Quantity

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Accessories for Overload Relays, Continued

	Description	For Use With	Cat. No.
	E1 Plus DeviceNet and Protection Module Communicates motor diagnostic data via DeviceNet, includes additional I/O, and provides enhanced motor protection options.❄	193-EE (all), 193S-EE (all)	**193-EDN**
	E1 Plus EtherNet/IP and Protection Module Communicates motor diagnostic data via EtherNet/IP, includes additional I/O, and provides enhanced motor protection options.❄		**193-ETN**
	E1 Plus PROFIBUS & Protection Module Communicates motor diagnostic data via PROFIBUS, includes additional I/O, and provides enhanced motor protection options.❄		**193-EPRB**
	E1 Plus Ground Fault/Jam Module Provides adjustable 20 mA…5 A ground fault and fixed jam protection. The module also provides an input to allow remote reset of a trip.❄		193-EGJ
	E1 Plus Ground Fault Module Provides adjustable 20 mA…5 A ground fault protection. The module also provides an input to allow remote reset of a trip.❄		193-EGF
	E1 Plus Jam Protection Module Provides Jam protection with adjustable trip level and trip delay setting. The module also provides an input to allow remote reset of a trip.❄		**193-EJM**
	E1 Plus PTC Module Provides terminals for connection up to six PTC thermistor sensors. Sensors react to actual temperature and therefore provide enhanced motor protection. Module also provides an input to allow remote reset of a trip.❄		193-EPT
	E1 Plus Remote Reset Module Provides an input to allow remote reset of a trip.❄		**193-ERR**
	E1 Plus Remote Indicator Display Displays the status of an E1 Plus from the front of a panel and features a reset button. Mounts in a standard 22 mm push button cutout.❄	193-EGF, 193-EJM, 193-EGJ, 193-PTC, 193-ERR (Ser. B or later)	193-ERID
	Replacement Connectors for Cat. No. 193-ERID	193-ERID	193-NCRID

✶ Requires external ground fault sensor, Cat. No. 193-CBCT_.
❄ Only one module may be added.

POWER

Accessories for Overload Relays, Continued

	Description		For Use With	Cat. No.
	Core Balanced Ground Fault Sensor • Required when using either an E1 Plus Ground Fault Protection or Ground Fault/Jam Module • Required for ground fault protection with the Cat. No. 193-EC3_ _ overload relay	20 mm (0.79 in.)	100-C09…100-C37	193-CBCT1
		40 mm (1.57 in.)	100-C09…100-C85	193-CBCT2
		63 mm (2.5 in.)	100-C09…100-C85, 100-D95…100-D180	193-CBCT3
		82 mm (3.25 in.)	100-C09…100-C85, 100-D95…100-D420	193-CBCT4
	DeviceNet Configuration Terminal Used to interface with objects on a DeviceNet network. Includes 1 m communications cable (193-CB1).		DeviceNet	**193-DNCT**
	1 meter communication cable, color-coded bare leads		193-DNCT	193-CB1
	1 meter communication cable, microconnector (male)			193-CM1
	Panel Mount Adapter/Door Mount Bezel Kit			193-DNCT-BZ1
	Remote Reset Solenoid	24V AC, 50/60 Hz	E1 Plus (all)	193-EMRJ
		110/120V AC, 50/60 Hz		193-EMRD
		220/240V AC, 50/60 Hz		193-EMRA
		24V DC		193-EMRZ24
		48V DC		193-EMRZ48
		115V DC		193-EMRZ01

	Description	For Use With	Cat. No.
	Terminal Lugs Set of two Protection class IP2X per IEC 60529 and DIN 40050	100-D140, 100-D180, 100-D95E…D180E, 193-EC_F, 193-EE_F	**100-DTB180**
		100-D210...100-D420, 193-EC_G, 193-EF2C, 193-EE_G	**100-DTB420**
	Terminal Covers Protection class IP20 per IEC 60529 and DIN 40 050 For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	100-D95…100-D180, 193-EC_F, 193-EE_F	**100-DTC180**
		100-D210...100-D420, 193-EC_G, 193-EE_G	**100-DTC420**
		100-D630…100-D860, 193-EC_H, 193-EE_H	**100-DTC860**
		100-D630…100-D860, 193-EC_H, 193-EE_H	100-DTCS860
	Terminal Lugs (UL/CSA), Copper Frame Set of three	100-D140, 100-D180, 193-EC_F, 193-EE_F	100-DL180
		100-D210…100-D420, 193-EC_G, 193-EE_G	100-DL420
		100-D630, 100-D860, 193-EC_H, 193-EE_H	100-DL630
		100-D630, 100-D860, 193-EC_H, 193-EE_H	100-DL860

Note: For labeling materials, see page 1-34.

E3 and E3 Plus Electronic Overload & Current Monitor Relays

- DeviceNet™ communication integrated
- IEC/NEMA configurations
- True RMS current sensing
- Single-/three-phase
- LED indicators
- Test/reset button
- Adjustable trip class (5…30)
- Motor Diagnostics

Bulletin	No. Inputs	No. Outputs	PM Diagnostics	PTC Thermistor	DeviceLogix	Ground Fault
193-EC1	2	1	✓	—	—	—
193-EC2	4	2	✓	✓	✓	Internal (1…5 A)
193-EC3	4	2	✓	✓	✓	External ❄ (20 mA…5 A)
193-EC4 ✶	4	2	✓	✓	✓	External ❄ (20 mA…5 A)

✶ The Bul. 193-EC4 is a current monitor relay for three independent current signals. Thermal overload motor protection is not provided.
❄ External ground fault sensor, Cat. No. 193-CBCT_, required

Electronic Motor Protection Relays 193-EC1 – Direct Contactor Mount

Mounts to Contactor	Adjustment Range [A]		Cat. No.
100-C09…100-C23	0.4…2		193-EC1PB
	1…5		**193-EC1AB**
	3…15		**193-EC1BB**
	5…25		193-EC1CB
100-C30…100-C43	1…5		193-EC1AD
	3…15		193-EC1BD
	5…25		193-EC1CD
	9…45		193-EC1DD
100-C60…100-C85	9…45		193-EC1DE
	18…90		193-EC1EE
100-D95…100-D180	28…140	✶	193-EC1FF
	42…210	✶	193-EC1GF
100-D210…100-D420	42…210	✶	193-EC1GG
	60…302	✶	193-EC1HG
	84…420	✶	193-EC1JG
100-D630…100-D860	125…630	✶	193-EC1KH
	172…860	✶	193-EC1LH

✶ Does not include terminal lugs.
Rated operating voltage IEC: 1000V AC.

Electronic Motor Protection Relay 193-EC2 – Direct Contactor Mount

Mounts to Contactor	Adjustment Range [A]	Cat. No.
100-C09…100-C23	0.4…2	**193-EC2PB**
	1…5	**193-EC2AB**
	3…15	**193-EC2BB**
	5…25	**193-EC2CB**
100-C30…100-C43	1…5	193-EC2AD
	3…15	193-EC2BD
	5…25	**193-EC2CD**
	9…45	**193-EC2DD**
100-C60…100-C85	9…45	193-EC2DE
	18…90	**193-EC2EE**

Electronic Overload Relays 193-EC3 – Direct Contactor Mount

Mounts to Contactor	Adjustment Range [A]		Cat. No.
100-C09…100-C23	0.4…2.0		**193-EC3PB**
	1…5		193-EC3AB
	3…15		**193-EC3BB**
	5…25		193-EC3CB
100-C30…100-C43	5…25		193-EC3CD
	9…45		193-EC3DD
100-C60…100-C85	9…45		193-EC3DE
	18…90		193-EC3EE
100-D95…100-D180	28…140	✶	193-EC3FF
	42…210	✶	193-EC3GF
100-D210…100-D420	42…210	✶	193-EC3GG
	60…302	✶	193-EC3HG
	84…420	✶	193-EC3JG
100-D630…100-D860	125…630	✶	193-EC3KH
	172…860	✶	193-EC3LH

✶ Does not include terminal lugs.
Rated operating voltage IEC: 1000V AC.

Current Monitor Relays 193-EC4 – Direct Contactor Mount

Mounts to Contactor	Adjustment Range [A]	Cat. No.
100-C09…100-C23	0.4…2.0	193-EC4PB
	1…5	193-EC4AB
	3…15	193-EC4BB
	5…25	193-EC4CB
100-C30…100-C43	9…45	193-EC4DD
100-C60…100-C85	18…90	193-EC4EE

Panel Mount Devices for use with External Current Transformers

Description	Adjustment Range [A] §	Cat. No.
• 2 Inputs • 1 Output	9…5000	193-EC1ZZ
• 4 Inputs • 2 Outputs • Ground Fault Sensor Input • PTC Thermistor Input • DeviceLogix	9…5000	193-EC3ZZ 193-EC4ZZ

§ Current transformers supplied by customer. Refer to CT chart for proper current transformer selection.
Order panel adapter 193-ECPM2 separately.

CT Ratio to FLA Setting Range Correlation

CT Ratio	FLA Setting Range [A]	CT Ratio	FLA Setting Range [A]	CT Ratio	FLA Setting Range [A]
50:5	9…45	300:5	60…302	1200:5	240…1215
100:5	18…90	500:5	84…420	2500:5	450…2250
150:5	28…140	600:5	125…630	5000:5	1000…5000
200:5	42…210	800:5	172…860	—	—

Add-on Accessories

	Description		For Use With	Cat. No.
	DeviceNet Configuration Terminal Used to interface with objects on a DeviceNet network. Includes 1 m communications cable (193-CB1). 193-CB1 cable included.		DeviceNet	**193-DNCT**
	1 meter communication cable, color-coded bare leads		193-DNCT	193-CB1
	1 meter communication cable, microconnector (male) M12		193-DNCT	193-CM1
	Panel Mount Adapter/Door Mount Bezel Kit for door mounting		193-DNCT	193-DNCT-BZ1
	DIN Rail/Panel Adapter *		193-EC__B	**193-ECPM1**
			193-EC_D, 193-EC_ZZ, 193-EC_ZZ	**193-ECPM2**
			193-EC__E	**193-ECPM3**
	AC Input Interface Module rated 110/120V AC, 50/60 Hz		193-EC — all 592-EC — all	193-EIMD
	Core Balanced Ground Fault Sensor • Required when using either an E1 Plus Ground Fault Protection or Ground Fault/Jam Module • Required for ground fault protection with the Cat. No. 193-EC3_ _ overload relay	Max. current 45 A Hole diameter 20 mm	100-C09…100-C37	193-CBCT1
		Max. current 90 A Hole diameter 40 mm	100-C09…100-C85	193-CBCT2
		Max. current 180 A Hole diameter 63 mm	100-C09…100-C85, 100-D95…100-D180	193-CBCT3
		Max. current 420 A Hole diameter 82 mm	100-C09…100-C85, 100-D95…100-D420	193-CBCT4
	Terminal Lugs Set of two Protection class IP2X per IEC 60529 and DIN 40050		100-D140, 100-D180, 100-D95E…D180E, 193-EC_F, 193-EE_F	**100-DTB180**
			100-D210...100-D420, 193-EC_G, 193-EF2C, 193-EE_G	**100-DTB420**
	Terminal Covers Protection class IP20 per IEC 60529 and DIN 40 050 For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies		100-D95…100-D180, 193-EC_F, 193-EE_F	**100-DTC180**
			100-D210...100-D420, 193-EC_G, 193-EE_G	**100-DTC420**
			100-D630…100-D860, 193-EC_H, 193-EE_H	**100-DTC860**
	Phase Barriers Set of 4		100-D630…D860, 193-EC_H, 193-EE_H	100-DPB860

* The electronic motor protection relay can be mounted separately to top-hat rail EN 50 02-35.

Note: For labeling materials, see page 1-34.

POWER

Modular Protection System 825-P

- 0.5…5000 A current range
- Suitable for low- and medium-voltage applications
- Modular design with pluggable options
  - – Voltage input card
  - – Expansion I/O cards
  - – Communications cards, including DeviceNet
  - – RTD scanner module
- Comprehensive protection functions
- Built-in keypad and backlit 2-Line LCD
- Test / Reset button
- Status LEDs
- 3 output relays
- 2 configurable inputs

	Description			Cat. No.
	Basic Unit Note: The minimum requirements for a complete basic system are one basic unit and one converter module.	120…240V AC/DC		**825-PD**
	User Manual Ships separate from Basic Unit. Please consult your local sales office.	825-UM004…		
	Converter Module	0.5…2.5 A		**825-MCM2**
		2.5…20 A		**825-MCM20**
		9…100 A		**825-MCM180**
		160…630 A		**825-MCM630N**
	Core Balance Ground Fault Sensor	100:1		**825-CBCT**
	RTD Scanner Module 12 RTD input channels with individual programming for 10 Ω copper, 100 Ω nickel, 120 Ω nickel, or 100 Ω platinum. Fiber optic connection to Basic Unit. Class I, Division 2, Group T48.. Use an up to 500m long Simplex 62.5/125µm fiber optic cable ST/ST (customer suplied).	120 / 240V AC		**825-PR12D**
	Voltage Input Card Monitoring of V_A, V_B, V_C, and V_N	300V AC Line to Neutral Max.	*	**825-PVS**
	Expansion I/O Card (3) Inputs (4) Output relays (1) 4…20 mA analog output	120V AC Rated Inputs	*	825-PIOD
		24V DC Rated Inputs		**825-PIOR**
	DeviceNet Communication Card DeviceLogix™ technology, Node address selection switches, ODVA conformance tested.		*	825-PDN
	DeviceNet User Manual Please consult your local sales office.	825-UM005…		
	Modbus RTU Communication Card	—	*	825-PMB

* Please consult your local sales office for factory configurated devices with option cards.

POWER

Accessories

	Description		Cat. No.
	M8 connections Set of three 4 x 16 x 102 mm (1/8 x 5/8 x 4-1/64 in.) (125 A max.) Universally applicable Weight: 230 g		825-MVM
	M8 connections Set of three 4 x 20 x 117 mm (1/8 x 25/32 x 4-39/64 in.) (180 A max.) Universally applicable		825-MVM2
	M6 lower connections Set of three For mounting on Bul. 100-D95 and 100-D110 contactors with conventional coil		825-MVS
	M8 lower connections Set of three For mounting on Bul. 100-D140, 100-D180 conventional and Bul. 100-D95E…100-D180E contactors with electronic coil		**825-MVS2**
	Terminal Shields Set of two Protection class IP10 per IEC 60529 and DIN 40 050 For direct-on-line, reversing, two-speed, and wye-delta/star-delta assemblies	100-D95, 100-D110	**100-DTS110**
		100-D140, 100-D180, 100-D95-E…100-D180-E	**100-DTS180**
		100-D210...100-D420	**100-DTS420**
	Terminal Lugs Set of two Protection class IP2X per IEC 60529 and DIN 40 050	100-D95, 100-D110	**100-DTB110**
		100-D140, 100-D180, 100-D95E…D180E, 193-EC_F, 193-EE_F	**100-DTB180**
		100-D210...100-D420, 193-EC_G, 193-EF2C, 193-EE_G	**100-DTB420**
	Thermal Utilization Meter	For display of percent thermal capacity utilized Requires the use of an Expansion I/O Card	825-MTUM
	Connection Cable (Replacement) Bul. 825-P to Bul. 825-MCM connection		825-MCA

POWER

Monitoring Relays 809, 813, 817, 819

- Current Monitors
- Phase Monitors
- Thermistor Monitors
- Rotation Monitors

The Monitoring Relays family of dedicated function electronic motor protection relays offers state-of-the-art supplementary protective functions that are easily added and applied to motor control circuits. Monitoring Relays are an economical choice for protecting equipment investments and minimizing production downtime. To meet specific application requirements, a full range of products allows selective addition of protective enhancing functions for both motors and equipment.

Motor Protection Relay Type	Description	Cat. No.
Bulletin 809S Current Monitors • under-, overcurrent, under-, overvoltage	0.5…5 A AC/DC (1-phase), 2.0…24.9V or 20…249V AC/DC 50/60 Hz	809S-E1⊗
• under-, overcurrent	2.0…15 A AC/DC (1-phase)	809S-E2⊗50
Bulletin 813S Phase Monitors • phase loss, under-, overvoltage, phase imbalance, phase sequence	Monitoring Range 150…500V AC	813S-E2B⊗50
	Monitoring Range 250…690V AC	813S-E2C⊗50
Bulletin 817 Thermistor Monitors • overtemperature	Automatic Reset ✶	**817-E1**
	Automatic, manual or remote reset, status storage ✶	**817-E2**
Bulletin 819 Motor Rotation Monitors • zero speed detection	Max. Monitored Voltage 400V AC max. (IEC), 300V AC max. (CSA/UL), or Frequency Monitoring for signals of any curve form in the range 16…100V_{p-p}	819-E1⊗
	Max. Monitored Voltage 690V AC max. (IEC), 600V AC max. (CSA/UL)	819-E2⊗

✶ Rated supply voltage of 24…240 V AC/DC.

⊗ Supply Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a Supply Voltage Suffix Code from the table below to complete the Cat. No. Example: **Cat. No. 809S-E1**⊗ becomes **809S-E1D**.

AC Control	
Code	Description
D	115V AC
A	230V AC

DC Control	
Code	Description
ZJ	24V DC

POWER

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